

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.

PCT/CH2004/000217

International filing date (day/month/year)

07.04.2004

Priority date (day/month/year)

14.04.2003

International Patent Classification (IPC) or both national classification and IPC

B01J20/18, B01D53/04, B01J20/30

Applicant

ZEOCHEM AG

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 65.1b(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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Authorized Officer

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Form PCT/ISA/217 (2nd ed.) 1999

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**International application No.
PCT/CH2004/000217**Box No. 1 Basis of the opinion**

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 29.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Form PCT/ISA/222 (January 2004)

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

 International application No.
PCT/CH2004/000217

Box No. II Priority

1. ☒ The following document has not been furnished:

- ☒ copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).
- ☐ translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. ☐ It has not been possible to consider the validity of the priority claim because a copy of the priority document was not available to the ISA at the time that the search was conducted (Rule 17.1). This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.
4. Additional observations, if necessary:

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
1. Statement

Novelty (N)	Yes: Claims	8-11
	No: Claims	1-7, 12-20
Inventive step (IS)	Yes: Claims	
	No: Claims	1-20
Industrial applicability (IA)	Yes: Claims	1-20
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VI Certain documents referred to

1. Certain published documents (Rules 43 bis. 1 and 70.10)
and/or
2. Non-written disclosures (Rules 43 bis. 1 and 70.9)
see Form 210

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/CH2004/000217

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

To item V

Reasoned statement concerning novelty, inventive step and industrial applicability; documents and comments in support of this statement.

1. In this communication the following documents (D) cited in the search report are mentioned; the numbering will also be retained in the further proceedings:

D1: DE-B-1 055 525

D2: US-A1-2001/0049998

D3: US-A-5 856 264

D4: EP-A-0 940 174

2. Clarity

- 2.1 The present patent claims 1-13 are directed to a method for the production of formed zeolites that is defined by the following unusual parameters:

- the bulk density of the highly dispersed attapulgite binder measured according to EN ISO 787: 1995 D is higher than 550 g/l.

In the present context, the use of this parameter must appear as lack of clarity in the sense of Art. 6 PCT. It is impossible to compare the parameter chosen by the applicant with that what the state of the art discloses in this respect (see Guidelines C-III, 4.7a).

3. The present application does not meet the provisions of Art. 33 (1) to (3) PCT since the subject matter of claims 1-20 is either not novel in the sense of Art. 33(2) PCT or does not involve an inventive step in the sense of Art. 33(3) PCT.

- 3.1 Document D1 discloses a method for the production of bound zeolitic molecular sieves (sodium zeolite X) wherein 3 to 95 parts attapulgite may be mixed with 97 to 5 parts molecular sieve without the adsorbing capacity of the molecular sieves being essentially reduced except for the dilution. In the production of the spheres from clay bound molecular sieves, clay, molecular sieve and water are thoroughly mixed in any manner.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITYInternational application No.
PCT/CH2004/000217

Sufficient water to achieve a semi-plastic status is used. In the following examples, after production, the spheres are dried in air and baked. In the examples an attapulgite with a mean particle size of 0.077μ is used (see columnne 1, line 4 to columnne 3, line 47; Table II and III). The bound molecular sieve is used for adsorbing CO_2 . The use of a mixture of attapulgite with a further clay binder and the use of pore forming agents are made available by D1 (see example columnne 2: 1.27 kg attapulgite and 0.21 kg kaoline; stearic acid).

- 3.2 Document D2 discloses a zeolitic adsorbens on the basis of LSF, wherein LSF is mixed with a binder (i.a. attapulgite) and optionally pore forming agent/peptitising agent, formed, dried and calcined; subsequently an ion exchange is made (see paragraphs [0039] to [0041]). In example 1 LSF zeolite and attapulgite (Minugel 400; as in the examples of the present application, the attapulgite is obtained from the firm ITC Florida) is formed to spheres (diameter 1.6 mm) with a granuling plate, dried and annealed. In Examples 2-4 an ion exchange with NaCl takes place. In Example 11 an aqueous solution of polyacrylamide is added to the LSF attapulgite mixture.
- 3.3 Document D3 discloses an adsorbens consisting of clay binder and a molecular sieve. The adsorbens is prepared by spray drying. In Example 1, a slurry of water, clay dispersing agent (sodium polycarboxylate) and attapulgite is produced. Then zeolite 3A is added thereto and the slurry is spray dried. The such produced particles are then calcined. Zeolite 13 X is a preferred zeolite (see columnne 5, lines 5-8); the use of mixtures of attapulgite with further clay binders is disclosed (see columnne 6, lines 44-51). Thus, the subject matter of claims 1, 3-7, 14 and 19 is made available.
- 3.4 Document D4 discloses an adsorbens on the basis of ion exchanged zeolite LSX. For the ion exchange lithium, potassium, calcium, strontium and barium are disclosed in paragraph [0040]. In example 1 zeolite LSX is mixed with attapulgite and water, formed, dried and calcined. Then an ion exchange with lithium takes place; the adsorbens is used for the selective adsorption of nitrogen in air separation processes (see Tables 1-3).

Since it is impossible to compare the parameters chosen by the applicant with what the state of the art discloses in this respect, first an objection regarding lack of novelty is

WRITER DIVISION OF THE
INTERNATIONAL SEARCHING AUTHORITYinternational application no.
PCT/CH2004/000217

made; the Examining division assumes that the parameter defined in claim 1 is implicitly present in the state of the art.

The applicant is pointed to the fact that a product does not already become new because it is produced by a new method. A claim characterizing a product by its method of production has to be considered as being directed to the product itself. In principle, the applicant shall demonstrate novelty and inventive step of a claimed product (according to claim 14) in comparison to products that have been produced by other methods but show comparable physical and chemical parameters.

Thus, the present application does not comply with the requirements of article 33(1) PCT since the subject matter of claims 1-7 and 12-20 is not new in the sense of Art. 33(2) PCT.

3.5 The dependent claims 8-11 do not seem to contain additional technical features that might lead to the acknowledgment of an inventive step (Art. 33(3) PCT).

To item VI:**Certain documents cited****Certain published documents**

Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (validly claimed) (day/month/year)
WO 03/061820	31.07.2003	22.01.2003	22.01.2002

To item VIII:**Certain observations to the international application.**

4.1 The term "highly disperse attapulgite binder" used in claim 1 has no generally acknowledged meaning and leaves an uncertainty with the reader concerning the meaning

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITYinternational application no.
PCT/CH2004/000217

of the respective characteristic. This results in the definition of the subject matter of this claim being unclear (Art. 6 PCT).

- 4.2 The term "conventional clay binder" used in claims 5-7 has no generally acknowledged meaning and leaves an uncertainty with the reader concerning the meaning of the respective characteristic. This results in the definition of the subject matter of these claims being unclear (Art. 6 PCT).